

A large, curved view of the Earth from space, showing the horizon and a portion of the planet's surface with clouds and landmasses. The background is black space.

ROLE OF THE MOON IN

ESA'S SPACE EXPLORATION STRATEGY

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VISION

Open-ended Process	Access Unknown Terrains	With Humans and Robotics	Global Endeavour	Societal Benefits
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STRATEGIC GOALS

Knowledge Gain	Economic Growth
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ENABLERS

International Cooperation	Long-term Planning	Stakeholder Engagement
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DESTINATIONS

LEO	<u>Moon</u>	Mars
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ROLE OF ESA

<u>Mission-focus</u>	Priority Technologies	<u>Building Blocks</u>
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ROLE OF THE MOON

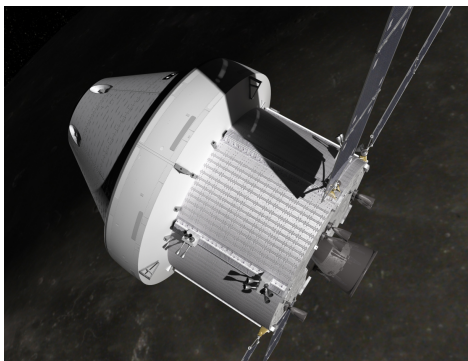


- Accessibility
- Resources
- Science
- Stepping Stone
 - ✓ Partnership
 - ✓ Risks mitigation
 - ✓ Technology

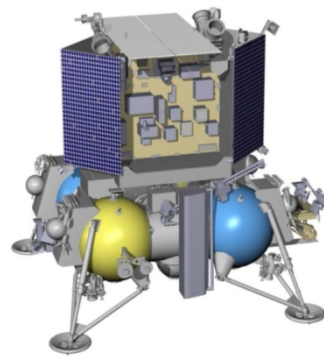
PROGRAMMATIC APPROACH FOR LUNAR EXPLORATION



- Secure role on critical path in international human exploration architecture
 - ✓ Cooperation with NASA on MPCV
- Acquire access to lunar surface
 - ✓ Cooperation with Roscosmos on Luna 27 lunar lander (LunaResurs1)
- Advance human-robotic partnership in space
 - ✓ ISS as test-bed for advancing technologies for in space tele-operation of robotic elements (METERON)



MPCV-ESM



LUNA 27

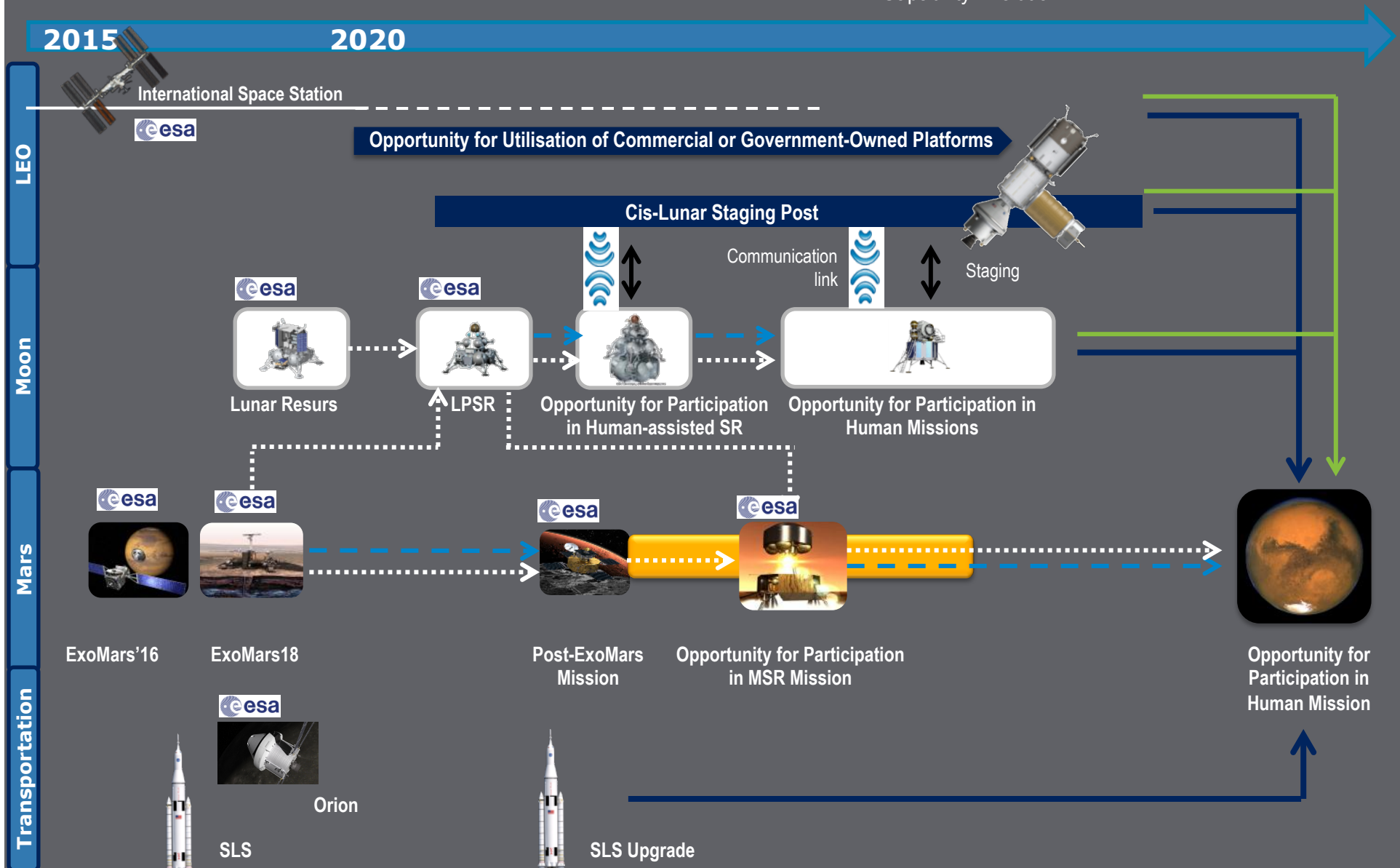


METERON

ESA MISSION SCENARIO

WITHIN INTERNATIONAL CONTEXT

- > Environmental Knowledge Gain
-> Technology Advancement
- > Human Health & Performance Risks
- > Capability Evolution



ROLE OF ESA

STRATEGIC BUILDING BLOCK ELEMENTS (EXAMPLES)



Building Blocks

Visual Navigation and Hazard Detection and Avoidance (VN&HDA)

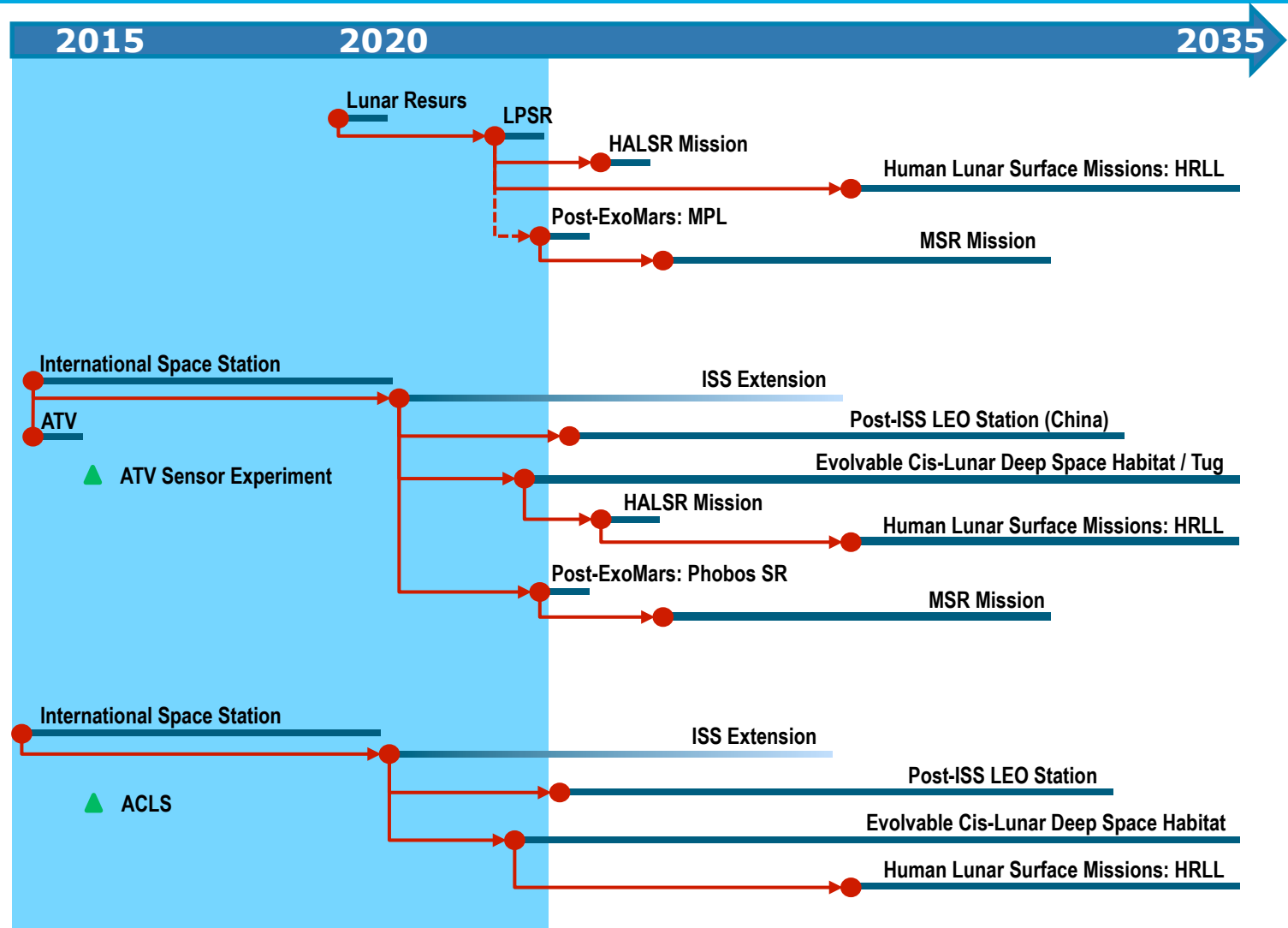
Lunar Resurs/LPSR

Rendezvous with non-cooperative targets and docking systems

ISS /MPCV-ESM

Habitation Systems

ISS /MPCV-ESM



I **Promote multi-lateral cooperation framework for lunar exploration exploiting common interests**

- Exploit potential of early human missions to lunar vicinity for advancing lunar exploration goals
 - ✓ Innovative mission scenarios
- Establish international staging post in lunar vicinity with redundant access for crew and cargo
 - ✓ Innovative mission scenarios
 - ✓ Robustness
 - ✓ International cooperation and private sector services
 - ✓ Deep space exploration preparation
- Build international human-rated lunar lander
 - ✓ Re-usability



THANK YOU !

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